

1 / 3 7

SEQUENCE LISTING

<110> CHUGAI SEIYAKU KABUSHIKI KAISHA

<120> MODIFIED ANTIBODY AGAINST CD22 AND UTILIZATION THEREOF

<130> C1-A0305P

<150> JP 2003-96950

<151> 2003-03-31

<160> 36

<170> PatentIn version 3.1

<210> 1

<211> 260

<212> PRT

<213> Artificial

<220>

<223> an artificially synthesized peptide sequence

<400> 1

Met Glu Arg His Trp Ile Phe Leu Phe Leu Phe Ser Val Thr Ala Gly

Val His Ser Gln Val Gln Leu Gln Glu Ser Gly Ala Glu Leu Ser Lys

20

25

30

Pro Gly Ala Ser Val Lys Met Ser Cys Lys Ala Ser Gly Tyr Thr Phe

35

40

45

Thr Ser Tyr Trp Leu His Trp Ile Lys Gln Arg Pro Gly Gln Gly Leu

50

55

60

Glu Trp Ile Gly Tyr Ile Asn Pro Arg Asn Asp Tyr Thr Glu Tyr Asn

65

70

75

80

Gln Asn Phe Lys Asp Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Ser

85

90

95

Thr Ala Tyr Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val

100

105

110

Tyr Tyr Cys Ala Arg Arg Asp Ile Thr Thr Phe Tyr Trp Gly Gln Gly

115

120

125

Thr Thr Leu Thr Val Ser Ser Gly Gly Gly Ser Asp Ile Gln Leu

130

135

140

Thr Gln Ser Pro Ser Ser Leu Ala Val Ser Ala Gly Glu Asn Val Thr

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145

150

155

160

Met Ser Cys Lys Ser Ser Gln Ser Val Leu Tyr Ser Ala Asn His Lys

165

170

175

Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ser Pro Lys Leu

180

185

190

Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val Pro Asp Arg Phe

195

200

205

Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Arg Val

210

215

220

Gln Val Glu Asp Leu Ala Ile Tyr Tyr Cys His Gln Tyr Leu Ser Ser

225

230

235

240

Trp Thr Phe Gly Gly Thr Lys Leu Glu Ile Lys Asp Tyr Lys Asp

245

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255

Asp Asp Asp Lys

260

<210> 2

<211> 810

4 / 37

<212> DNA

<213> Artificial

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<223> an artificially synthesized DNA sequence

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<221> CDS

<222> (14)..(799)

223

<400> 2

cctgaattcc acc atg gaa agg cac tgg atc ttt ctc ttc ctg ttt tca

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Met Glu Arg His Trp Ile Phe Leu Phe Leu Phe Ser

1 . . . 5 10

10

gta act gca ggt gtc cac tcc cag gtc cag ctg cag gag tca ggg gct

97

Val Thr Ala Gly Val His Ser Gln Val Gln Leu Gln Glu Ser Gly Ala

15 20 25

gaa ctg tca aaa cct ggg gcc tca gtg aag atg tcc tgc aag gct tct

145

Glu Leu Ser Lys Pro Gly Ala Ser Val Lys Met Ser Cys Lys Ala Ser

ggc tac acc ttt act agc tac tgg ctg cac tgg ata aaa cag agg cct

193

Gly Tyr Thr Phe Thr Ser Tyr Trp Leu His Trp Ile Lys Gln Arg Pro

5 / 3 7

45

50

55

60

gga cag ggt ctg gaa tgg att gga tac att aat cct agg aat gat tat 241
Gly Gln Gly Leu Glu Trp Ile Gly Tyr Ile Asn Pro Arg Asn Asp Tyr

65

70

75

act gag tac aat cag aac ttc aag gac aag gcc aca ttg act gca gac 289
Thr Glu Tyr Asn Gln Asn Phe Lys Asp Lys Ala Thr Leu Thr Ala Asp
80 85 90

aaa tcc tcc agc aca gcc tac atg caa ctg agc agc ctg aca tct gag 337
Lys Ser Ser Ser Thr Ala Tyr Met Gln Leu Ser Ser Leu Thr Ser Glu
95 100 105

gac tct gca gtc tat tac tgt gca aga agg gat att act acg ttc tac 385
Asp Ser Ala Val Tyr Tyr Cys Ala Arg Arg Asp Ile Thr Thr Phe Tyr
110 115 120

tgg ggc caa ggc acc act ctc aca gtc tcc tcg ggt gga ggc ggt agc 433
Trp Gly Gln Gly Thr Thr Leu Thr Val Ser Ser Gly Gly Gly Ser
125 130 135 140

gac att cag ctg acc cag tct cca tca tct ctg gct gtg tct gca gga 481
Asp Ile Gln Leu Thr Gln Ser Pro Ser Ser Leu Ala Val Ser Ala Gly
145 150 155

6 / 3 7

gaa aac gtc act atg agc tgt aag tcc agt caa agt gtt tta tac agt	529	
Glu Asn Val Thr Met Ser Cys Lys Ser Ser Gln Ser Val Leu Tyr Ser		
160	165	170
gca aat cac aag aac tac ttg gcc tgg tac cag cag aaa cca ggg cag	577	
Ala Asn His Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln		
175	180	185
tct cct aaa ctg ctg atc tac tgg gca tcc act agg gaa tct ggt gtc	625	
Ser Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val		
190	195	200
cct gat cgc ttc aca ggc agc gga tct ggg aca gat ttt act ctt acc	673	
Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr		
205	210	215
		220
atc agc aga gta caa gtt gaa gac ctg gca att tat tat tgt cac caa	721	
Ile Ser Arg Val Gln Val Glu Asp Leu Ala Ile Tyr Tyr Cys His Gln		
225	230	235
tac ctc tcc tcg tgg acg ttc ggt gga ggg acc aag ctg gag atc aaa	769	
Tyr Leu Ser Ser Trp Thr Phe Gly Gly Thr Lys Leu Glu Ile Lys		
240	245	250
gac tac aag gat gac gac gat aag tga taa gcggccgcaa t	810	
Asp Tyr Lys Asp Asp Asp Lys		

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255

260

<210> 3

<211> 262

<212> PRT

<213> Artificial

<220>

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<400> 3

Met Asn Phe Gly Leu Arg Leu Ile Phe Leu Val Leu Thr Leu Lys Gly

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15

Val Lys Cys Glu Val Gln Leu Val Glu Ser Gly Gly Leu Val Lys

20

25

30

Pro Gly Gly Ser Leu Lys Leu Ser Cys Ala Ala Ser Gly Phe Ala Phe

35

40

45

Ser Ile Tyr Asp Met Ser Trp Val Arg Gln Thr Pro Glu Lys Arg Leu

50

55

60

Glu Trp Val Ala Tyr Ile Ser Ser Gly Gly Thr Thr Tyr Tyr Pro

65

70

75

80

Asp Thr Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn

85

90

95

Thr Leu Tyr Leu Gln Met Ser Ser Leu Lys Ser Glu Asp Thr Ala Met

100

105

110

Tyr Tyr Cys Ala Arg His Ser Gly Tyr Gly Ser Ser Tyr Gly Val Leu

115

120

125

Phe Ala Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ala Gly Gly

130

135

140

Gly Gly Ser Asp Ile Gln Met Thr Gln Thr Thr Ser Ser Leu Ser Ala

145

150

155

160

Ser Leu Gly Asp Arg Val Thr Ile Ser Cys Arg Ala Ser Gln Asp Ile

165

170

175

Ser Asn Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys

180

185

190

Leu Leu Ile Tyr Tyr Thr Ser Ile Leu His Ser Gly Val Pro Ser Lys

195

200

205

Phe Ser Gly Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn

9 / 3 7

210

215

220

Leu Glu Gln Glu Asp Phe Ala Thr Tyr Phe Cys Gln Gln Gly Asn Thr

225

230

235

240

Leu Pro Trp Thr Phe Gly Gly Thr Lys Leu Glu Ile Lys Asp Tyr

245

250

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Lys Asp Asp Asp Asp Lys

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<210> 4

<211> 816

<212> DNA

<213> Artificial

<220>

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<220>

<221> CDS

<222> (14)..(805)

<223>

<400> 4

10 / 37

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Met Asn Phe Gly Leu Arg Leu Ile Phe Leu Val Leu
1 5 10

act tta aaa ggt gtg aag tgt gaa gtg cag ctg gtg gag tct ggg gga 97
Thr Leu Lys Gly Val Lys Cys Glu Val Gln Leu Val Glu Ser Gly Gly
15 20 25

ggc tta gtg aag cct gga ggg tcc ctg aaa ctc tcc tgt gca gcc tct 145
Gly Leu Val Lys Pro Gly Gly Ser Leu Lys Leu Ser Cys Ala Ala Ser
30 35 40

gga ttc gct ttc agt atc tat gac atg tct tgg gtt cgcc cag act ccg 193
Gly Phe Ala Phe Ser Ile Tyr Asp Met Ser Trp Val Arg Gln Thr Pro
45 50 55 60

gag aag agg ctg gag tgg gtc gca tac att agt agt ggt ggt acc 241
Glu Lys Arg Leu Glu Trp Val Ala Tyr Ile Ser Ser Gly Gly Thr
65 70 75

acc tac tat cca gac act gtg aag ggc cga ttc acc atc tcc aga gac 289
Thr Tyr Tyr Pro Asp Thr Val Lys Gly Arg Phe Thr Ile Ser Arg Asp
80 85 90

aat gcc aag aac acc ctg tac ctg caa atg agc agt ctg aag tct gag 337
Asn Ala Lys Asn Thr Leu Tyr Leu Gln Met Ser Ser Leu Lys Ser Glu

1 1 / 3 7

95

100

105

gac aca gcc atg tat tac tgt gca aga cat agt ggc tac ggt agt agc 385

Asp Thr Ala Met Tyr Tyr Cys Ala Arg His Ser Gly Tyr Gly Ser Ser

110

115

120

tac ggg gtt ttg ttt gct tac tgg ggc caa ggg act ctg gtc act gtc 433

Tyr Gly Val Leu Phe Ala Tyr Trp Gly Gln Gly Thr Leu Val Thr Val

125

130

135

140

tct gca ggt gga ggc ggt agc gat atc cag atg acc cag act aca tcc 481

Ser Ala Gly Gly Gly Ser Asp Ile Gln Met Thr Gln Thr Thr Ser

145

150

155

tcc ctg tct gcc tct ctg gga gac aga gtc acc att agt tgc agg gca 529

Ser Leu Ser Ala Ser Leu Gly Asp Arg Val Thr Ile Ser Cys Arg Ala

160

165

170

agt cag gac att agc aat tat tta aac tgg tat cag cag aaa cca gat 577

Ser Gln Asp Ile Ser Asn Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Asp

175

180

185

gga act gtt aaa ctc ctg atc tac tac aca tca ata tta cac tca gga 625

Gly Thr Val Lys Leu Leu Ile Tyr Tyr Thr Ser Ile Leu His Ser Gly

190

195

200

1 2 / 3 7

gtc cca tca aag ttc agt ggc agt ggg tct gga aca gat tat tct ctc 673

Val Pro Ser Lys Phe Ser Gly Ser Gly Ser Thr Asp Tyr Ser Leu

205 210 215 220

acc att agc aac ctg gag caa gaa gat ttt gcc act tac ttt tgc caa 721

Thr Ile Ser Asn Leu Glu Gln Glu Asp Phe Ala Thr Tyr Phe Cys Gln

225 230 235

cag ggt aat acg ctt ccg tgg acg ttc ggt gga ggc acc aag ctg gaa 769

Gln Gly Asn Thr Leu Pro Trp Thr Phe Gly Gly Thr Lys Leu Glu

240 245 250

atc aaa gac tac aag gat gac gac gat aag tga taa gcggccgcaa t 816

Ile Lys Asp Tyr Lys Asp Asp Asp Lys

255 260

<210> 5

<211> 116

<212> PRT

<213> Artificial

<220>

<223> an artificially synthesized peptide sequence

1 3 / 3 7

<400> 5

Gln Val Gln Leu Gln Glu Ser Gly Ala Glu Leu Ser Lys Pro Gly Ala

1

5

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15

Ser Val Lys Met Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr

20

25

30

Trp Leu His Trp Ile Lys Gln Arg Pro Gly Gln Gly Leu Glu Trp Ile

35

40

45

Gly Tyr Ile Asn Pro Arg Asn Asp Tyr Thr Glu Tyr Asn Gln Asn Phe

50

55

60

Lys Asp Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Ser Thr Ala Tyr

65

70

75

80

Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys

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90

95

Ala Arg Arg Asp Ile Thr Thr Phe Tyr Trp Gly Gln Gly Thr Thr Leu

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Thr Val Ser Ser

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1 4 / 3 7

<210> 6

<211> 348

<212> DNA

<213> Artificial

<220>

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<220>

<221> CDS

<222> (1)..(348)

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cag gtc cag ctg cag gag tca ggg gct gaa ctg tca aaa cct ggg gcc 48
Gln Val Gln Leu Gln Glu Ser Gly Ala Glu Leu Ser Lys Pro Gly Ala
1 5 10 15

tca gtg aag atg tcc tgc aag gct tct ggc tac acc ttt act agc tac 96
Ser Val Lys Met Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Ser Tyr
20 25 30

tgg ctg cac tgg ata aaa cag agg cct gga cag ggt ctg gaa tgg att 144
Trp Leu His Trp Ile Lys Gln Arg Pro Gly Gln Gly Leu Glu Trp Ile
35 40 45

1 5 / 3 7

gga tac att aat cct agg aat gat tat act gag tac aat cag aac ttc 192

Gly Tyr Ile Asn Pro Arg Asn Asp Tyr Thr Glu Tyr Asn Gln Asn Phe

50

55

60

aag gac aag gcc aca ttg act gca gac aaa tcc tcc agc aca gcc tac 240

Lys Asp Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Ser Thr Ala Tyr

65

70

75

80

atg caa ctg agc agc ctg aca tct gag gac tct gca gtc tat tac tgt 288

Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys

85

90

95

gca aga agg gat att act acg ttc tac tgg ggc caa ggc acc act ctc 336

Ala Arg Arg Asp Ile Thr Thr Phe Tyr Trp Gly Gln Gly Thr Thr Leu

100

105

110

aca gtc tcc tcg 348

Thr Val Ser Ser

115

<210> 7

<211> 112

<212> PRT

<213> Artificial

16 / 37

<220>

<223> an artificially synthesized peptide sequence

<400> 7

Asp Ile Gln Leu Thr Gln Ser Pro Ser Ser Leu Ala Val Ser Ala Gly
1 5 10 15

Glu Asn Val Thr Met Ser Cys Lys Ser Ser Gln Ser Val Leu Tyr Ser
20 25 30

Ala Asn His Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
35 40 45

Ser Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
50 55 60

Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
65 70 75 80

Ile Ser Arg Val Gln Val Glu Asp Leu Ala Ile Tyr Tyr Cys His Gln
85 90 95

Tyr Leu Ser Ser Trp Thr Phe Gly Gly Thr Lys Leu Glu Ile Lys
100 105 110

1 7 / 3 7

<210> 8

<211> 336

<212> DNA

<213> Artificial

<220>

<223> an artificially synthesized DNA sequence

<220>

<221> CDS

<222> (1)..(336)

<223>

<400> 8

gac att cag ctg acc cag tct cca tca tct ctg gct gtg tct gca gga 48
Asp Ile Gln Leu Thr Gln Ser Pro Ser Ser Leu Ala Val Ser Ala Gly
1 5 10 15

gaa aac gtc act atg agc tgt aag tcc agt caa agt gtt tta tac agt 96
Glu Asn Val Thr Met Ser Cys Lys Ser Ser Gln Ser Val Leu Tyr Ser
20 25 30

gca aat cac aag aac tac ttg gcc tgg tac cag cag aaa cca ggg cag 144
Ala Asn His Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
35 40 45

18 / 37

tct cct aaa ctg ctg atc tac tgg gca tcc act agg gaa tct ggt gtc 192

Ser Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val

50

55

60

cct gat cgc ttc aca ggc agc gga tct ggg aca gat ttt act ctt acc 240

Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr

65

70

75

80

atc agc aga gta caa gtt gaa gac ctg gca att tat tat tgt cac caa 288

Ile Ser Arg Val Gln Val Glu Asp Leu Ala Ile Tyr Tyr Cys His Gln

85

90

95

tac ctc tcc tcg tgg acg ttc ggt gga ggg acc aag ctg gag atc aaa 336

Tyr Leu Ser Ser Trp Thr Phe Gly Gly Thr Lys Leu Glu Ile Lys

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105

110

<210> 9

<211> 123

<212> PRT

<213> Artificial

<220>

<223> an artificially synthesized peptide sequence

<400> 9

19 / 37

Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Lys Pro Gly Gly

1

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15

Ser Leu Lys Leu Ser Cys Ala Ala Ser Gly Phe Ala Phe Ser Ile Tyr

20

25

30

Asp Met Ser Trp Val Arg Gln Thr Pro Glu Lys Arg Leu Glu Trp Val

35

40

45

Ala Tyr Ile Ser Ser Gly Gly Thr Thr Tyr Tyr Pro Asp Thr Val

50

55

60

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Thr Leu Tyr

65

70

75

80

Leu Gln Met Ser Ser Leu Lys Ser Glu Asp Thr Ala Met Tyr Tyr Cys

85

90

95

Ala Arg His Ser Gly Tyr Gly Ser Ser Tyr Gly Val Leu Phe Ala Tyr

100

105

110

Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ala

115

120

<211> 369

<212> DNA

<213> Artificial

<220>

<223> an artificially synthesized DNA sequence

<220>

<221> CDS

<222> (1)..(369)

<223>

<400> 10

gaa	gtg	cag	ctg	gtg	gag	tct	ggg	gga	ggc	tta	gtg	aag	cct	gga	ggg	48
Glu	Val	Gln	Leu	Val	Glu	Ser	Gly	Gly	Gly	Leu	Val	Lys	Pro	Gly	Gly	
1			5							10				15		

tcc	ctg	aaa	ctc	tcc	tgt	gca	gcc	tct	gga	ttc	gct	ttc	agt	atc	tat	96
Ser	Leu	Lys	Leu	Ser	Cys	Ala	Ala	Ser	Gly	Phe	Ala	Phe	Ser	Ile	Tyr	
			20							25				30		

gac	atg	tct	tgg	gtt	cgc	cag	act	ccg	gag	aag	agg	ctg	gag	tgg	gtc	144
Asp	Met	Ser	Trp	Val	Arg	Gln	Thr	Pro	Glu	Lys	Arg	Leu	Glu	Trp	Val	
			35							40				45		

gca	tac	att	agt	agt	ggt	ggt	acc	acc	tac	tat	cca	gac	act	gtg	192
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

21 / 37

Ala Tyr Ile Ser Ser Gly Gly Thr Thr Tyr Tyr Pro Asp Thr Val

50

55

60

aag ggc cga ttc acc atc tcc aga gac aat gcc aag aac acc ctg tac 240

Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Thr Leu Tyr

65

70

75

80

ctg caa atg agc agt ctg aag tct gag gac aca gcc atg tat tac tgt 288

Leu Gln Met Ser Ser Leu Lys Ser Glu Asp Thr Ala Met Tyr Tyr Cys

85

90

95

gca aga cat agt ggc tac ggt agt agc tac ggg gtt ttg ttt gct tac 336

Ala Arg His Ser Gly Tyr Gly Ser Ser Tyr Gly Val Leu Phe Ala Tyr

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105

110

tgg ggc caa ggg act ctg gtc act gtc tct gca 369

Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ala

115

120

<210> 11

<211> 107

<212> PRT

<213> Artificial

<220>

22 / 37

<223> an artificially synthesized peptide sequence

<400> 11

Asp Ile Gln Met Thr Gln Thr Thr Ser Ser Leu Ser Ala Ser Leu Gly

1 5 10 15

Asp Arg Val Thr Ile Ser Cys Arg Ala Ser Gln Asp Ile Ser Asn Tyr

20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile

35 40 45

Tyr Tyr Thr Ser Ile Leu His Ser Gly Val Pro Ser Lys Phe Ser Gly

50 55 60

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu Gln

65 70 75 80

Glu Asp Phe Ala Thr Tyr Phe Cys Gln Gln Gly Asn Thr Leu Pro Trp

85 90 95

Thr Phe Gly Gly Thr Lys Leu Glu Ile Lys

100 105

<210> 12

23 / 37

<211> 321

<212> DNA

<213> Artificial

<220>

<223> an artificially synthesized DNA sequence

<220>

<221> CDS

<222> (1)..(321)

<223>

<400> 12

gat atc cag atg acc cag act aca tcc tcc ctg tct gcc tct ctg gga 48
Asp Ile Gln Met Thr Gln Thr Thr Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15

gac aga gtc acc att agt tgc agg gca agt cag gac att agc aat tat 96
Asp Arg Val Thr Ile Ser Cys Arg Ala Ser Gln Asp Ile Ser Asn Tyr
20 25 30

tta aac tgg tat cag cag aaa cca gat gga act gtt aaa ctc ctg atc 144
Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile
35 40 45

tac tac aca tca ata tta cac tca gga gtc cca tca aag ttc agt ggc 192

24 / 37

Tyr Tyr Thr Ser Ile Leu His Ser Gly Val Pro Ser Lys Phe Ser Gly

50 55 60

agt ggg tct gga aca gat tat tct ctc acc att agc aac ctg gag caa 240

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu Gln

65 70 75 80

gaa gat ttt gcc act tac ttt tgc caa cag ggt aat acg ctt ccg tgg 288

Glu Asp Phe Ala Thr Tyr Phe Cys Gln Gln Gly Asn Thr Leu Pro Trp

85 90 95

acg ttc ggt gga ggc acc aag ctg gaa atc aaa 321

Thr Phe Gly Gly Thr Lys Leu Glu Ile Lys

100 105

<210> 13

<211> 88

<212> DNA

<213> Artificial

<220>

<223> an artificially synthesized DNA sequence

<400> 13

cctgaattcc accatggaaa ggcactggat ctttcttttc ctgtttcag taactgcagg 60

25 / 37

tgtccactcc caggtccagc tgcaggag

88

<210> 14

<211> 90

<212> DNA

<213> Artificial

<220>

<223> an artificially synthesized DNA sequence

<400> 14

gatgtcctgc aaggcttctg gctacacctt tactagctac tggctgcact ggataaaaca 60

gaggcctgga cagggtctgg aatggattgg

90

<210> 15

<211> 87

<212> DNA

<213> Artificial

<220>

<223> an artificially synthesized DNA sequence

26 / 37

<400> 15

cttcaaggac aaggccacat tgactgcaga caaatcctcc agcacagcct acatgcaact 60

gagcagcctg acatctgagg actctgc 87

<210> 16

<211> 88

<212> DNA

<213> Artificial

<220>

<223> an artificially synthesized DNA sequence

<400> 16

ggcaccactc tcacagtctc ctcgggtgga ggcggtagcg acattcagct gacctcgtct 60

ccatcatctc tggctgtgtc tgcaggag 88

<210> 17

<211> 91

<212> DNA

<213> Artificial

<220>

27 / 37

<223> an artificially synthesized DNA sequence

<400> 17

cagtgc₁aat cacaagaact acttggc₂tg gtaccagc₃g aaaccaggc₄ agtctc₅taa₆ 60

actgctgate tactgggcat ccactaggga a 91

<210> 18

<211> 105

<212> DNA

<213> Artificial

<220>

<223> an artificially synthesized DNA sequence

<400> 18

ggcagcggat ctgggacaga ttttactctt accatcagca gagtacaagt tgaagacctg 60

gcaatttatt attgtcacca atacctctcc tcgtggacgt tcgg₁ 105

<210> 19

<211> 91

<212> DNA

<213> Artificial

28 / 37

<220>

<223> an artificially synthesized DNA sequence

<400> 19

ggtagcca gaaggcttgc aggacatctt cactgaggcc ccagggtttt acagttcagc 60

ccctgactcc tgcagctgga cctgggagtg g 91

<210> 20

<211> 96

<212> DNA

<213> Artificial

<220>

<223> an artificially synthesized DNA sequence

<400> 20

tgcagtcaat gtggccttgt cttgaagtt ctgatttac tcagtataat cattcctagg 60

attaatgtat ccaatccatt ccagaccctg tccagg 96

<210> 21

<211> 105

2 9 / 3 7

<212> DNA

<213> Artificial

<220>

<223> an artificially synthesized DNA sequence

<400> 21

acccgaggag actgtgagag tggtgccttg gccccagtag aacgtagtaa tatcccttct 60

tgcacagtaa tagactgcag agtcctcaga tgtcaggctg ctcag 105

<210> 22

<211> 102

<212> DNA

<213> Artificial

<220>

<223> an artificially synthesized DNA sequence

<400> 22

ccaggccaag tagttcttgat gattgcact gtataaaaca ctttgactgg acttacagct 60

catagtgacg ttttctcctg cagacacagc cagagatgat gg 102

30 / 37

<210> 23

<211> 84

<212> DNA

<213> Artificial

<220>

<223> an artificially synthesized DNA sequence

<400> 23

aagagtaaaa tctgtccca ag atccgctgcc tgtgaagcga tcagggacac cagattccct 60

agtggatgcc cagtagatca gcag 84

<210> 24

<211> 93

<212> DNA

<213> Artificial

<220>

<223> an artificially synthesized DNA sequence

<400> 24

attgcggccg cttatcactt atcgctgtca tccttgtagt ctttgatctc cagcttggtc 60

cctccaccga acgtccacga ggagaggtat tgg 93

<210> 25

<211> 92

<212> DNA

<213> Artificial

<220>

<223> an artificially synthesized DNA sequence

<400> 25

cctgaattcc accatgaact ttgggctcag attgatttc ctgtcctta ctttaaaagg 60

tgtgaagtgt gaagtgcagc tggtgaggc tg 92

<210> 26

<211> 89

<212> DNA

<213> Artificial

<220>

<223> an artificially synthesized DNA sequence

<400> 26

gtgcagccctc tggattcgct ttcaatct atgacatgct ttgggttcgc cagactccgg 60

agaaggct ggagtgggtc gcatacatt 89

<210> 27

<211> 86

<212> DNA

<213> Artificial

<220>

<223> an artificially synthesized DNA sequence

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<210> 28

<211> 98

<212> DNA

<213> Artificial

<220>

<223> an artificially synthesized DNA sequence

3 3 / 3 7

<400> 28

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cggtagcgat atccagatga cccagactac atcctccc 98

<210> 29

<211> 114

<212> DNA

<213> Artificial

<220>

<223> an artificially synthesized DNA sequence

<400> 29

ttgcagggca agtcaggaca ttagcaatta tttaaacitgg tatcagcaga aaccagatgg 60

aactgttaaa ctccctgatct actacacatc aatattacac tcaggagtcc catc 114

<210> 30

<211> 87

<212> DNA

<213> Artificial

<220>

34 / 37

<223> an artificially synthesized DNA sequence

<400> 30

ctctcaccat tagcaacctg gagcaagaag atttgccac ttactttgc caacaggta 60

atacgcttcc gtggacgttc ggtggag 87

<210> 31

<211> 91

<212> DNA

<213> Artificial

<220>

<223> an artificially synthesized DNA sequence

<400> 31

ctgaaagcga atccagaggc tgcacaggag agtttcaggg accctccagg cttcactaag 60

cctccccag actccaccag ctgcacttca c 91

<210> 32

<211> 91

<212> DNA

<213> Artificial

35 / 37

<220>

<223> an artificially synthesized DNA sequence

<400> 32

gtctctggag atggtaatc ggcccttcac agtgtctgga tagtaggtgg taccaccacc 60

actactaatg tatgcgaccc actccagcct c 91

<210> 33

<211> 90

<212> DNA

<213> Artificial

<220>

<223> an artificially synthesized DNA sequence

<400> 33

ggccccagta agcaaacaaa accccgttagc tactaccgta gccactatgt cttgcacagt 60

aatacatggc tgtgtcctca gacttcagac 90

<210> 34

<211> 90

3 6 / 3 7

<212> DNA

<213> Artificial

<220>

<223> an artificially synthesized DNA sequence

<400> 34

taattgctaa tgtcctgact tgccctgcaa ctaatggtga ctctgtctcc cagagaggca 60

gacagggagg atgttagtctg ggtcatctgg 90

<210> 35

<211> 93

<212> DNA

<213> Artificial

<220>

<223> an artificially synthesized DNA sequence

<400> 35

tcttgctcca gtttgctaat ggtgagagaa taatcttttc cagaccact gccactgaac 60

tttgcgtggaa ctcctgagtg taatattgtat gtg 93

37 / 37

<210> 36

<211> 85

<212> DNA

<213> Artificial

<220>

<223> an artificially synthesized DNA sequence

<400> 36

attgcggccg cttatcactt atcggtcgta tccttgtagt ctttgatttc cagcttggtg 60

cctccaccga acgtccacgg aagcg 85